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To: Messrs. Bucknam and Archer

Taiwanese Patent Application No. 85102217
Publication No. 286359
Patent No. 081073

Title: Vibration diagnostic method for diagnosing deterioration and malfunction of a roller rolling member

Abstract:

A vibration diagnostic method for diagnosing deterioration and malfunction of a roller rolling member, comprising the following steps: (a) measuring a vibration signal; (b) judging whether an amplitude of the vibration signal is larger than a set threshold value or not, if not, then determining the roller to be normal and finishing diagnosis; (c) judging whether a wave height rate of the vibration signal (i.e., a ratio of a maximum peak value and a mean square value of the vibration signal) is larger than 4.5 or not, if yes, then proceeding step (h); (d) employing a spectral conversion to obtain a center frequency of the vibration; (e) judging whether the center frequency is lower than a lower frequency limit or not, if yes, then determining a bearing mounting to be loose and finishing the diagnosis; (f) judging whether the center frequency is higher than a frequency upper limit or not, if yes, then determining a bearing mounting to be worn and finishing the diagnosis; (g) determining common influences of the loose of bearing mounting and the wear of bearing and finishing the diagnosis; (h) using a spectrum of an envelope to find a repetitive frequency of an impact pulse; (i) judging whether the repetitive frequency is a characteristic frequency of a wear of a transmission teeth, if yes, then determining the transmission teeth to be worn and finishing the diagnosis; (j) judging whether the repetitive frequency is a characteristic frequency of a defect of the bearing, if yes, then determining the bearing to be defective and finishing the diagnosis; judging if the deterioration and malfunction of a roller rolling member are caused by other reasons and finishing the diagnosis.